

**Access. Number**

97-323415

**Title**

INK JET RECORDING APPARATUS

**Patent assignee**

(2000526) BROTHER IND LTD

**Inventor(s)**

HIWADA, SHIYUUHEI

**Pub. number**

97.12.16 J09323415, JP 09-323415

**Appl. Number**

96.06.05 96JP-165302, 08-165302

**Engl. Ab. Source**

97.12.16 SECT. , SECTION NO. ; VOL. 97, NO. 12.

**Int. class.**

B41J-002/045; B41J-002/055; B41J-002/175

**JAPIO class. codes**

29.4 (PRECISION INSTRUMENTS--Business Machines)

**Fixed Keyword**

R005 (PIEZOELECTRIC FERROELECTRIC SUBSTANCES); R105 (INFORMATION PROCESSING--Ink Jet Printers); R124 (CHEMISTRY--Epoxy Resins); R131 (INFORMATION PROCESSING--Microcomputers & Microprocessors)

**Abstract**

PROBLEM TO BE SOLVED:To enhance the radiation efficiency of a driver IC chip. SOLUTION:An anisotropic conductive material 65 is interposed between the rear surface 61 of a driver IC chip 60 and the side surface 21f of a head 21 to closely bond and fix the driver IC chip 60 and the side surface 21f of the head 21. Further, chip electrodes 62, 63 and head electrodes 68, 69 are electrically connected by the anisotropic conductive material 65. By this constitution, the heat generated in the driver IC chip 60 is conducted to the side surface 21f of the head 21 through the anisotropic conductive material 65 and further conducted to the ink in the head 21. That is, the driver IC chip 60 can be forcibly cooled by the ink.

---

**Access. Number**

97-323414

**Title**

INK JET RECORDING APPARATUS

**Patent assignee**

(2000526) BROTHER IND LTD

**Inventor(s)**

HIWADA, SHIYUUHEI

**Pub. number**

97.12.16 J09323414, JP 09-323414

**Appl. Number**

96.06.05 96JP-165301, 08-165301

**Engl. Ab. Source**

97.12.16 SECT. , SECTION NO. ; VOL. 97, NO. 12.

**Int. class.**

B41J-002/045; B41J-002/055; B41J-002/175

**JAPIO class. codes**

29.4 (PRECISION INSTRUMENTS--Business Machines)

**Fixed Keyword**

R005 (PIEZOELECTRIC FERROELECTRIC SUBSTANCES); R044 (CHEMISTRY--Photosensitive Resins); R105 (INFORMATION PROCESSING--Ink Jet Printers); R124 (CHEMISTRY--Epoxy Resins); R131 (INFORMATION PROCESSING--Microcomputers & Microprocessors)

**Abstract**

PROBLEM TO BE SOLVED:To enhance the radiation efficiency of a driver IC chip. SOLUTION:The chip electrodes 62, 63 formed on the rear surface 61 of a driver IC chip 60 and the head electrodes 68, 69 formed on the side surface 21f of a head 21 are electrically connected by a bump 64 and the gap between the rear surface 61 of the driver IC chip 60 and the side surface 21f of the head 21 is filled with a potting material 66 to cover the surface of the driver IC chip 60 with the potting material 66. By this constitution, the heat generated in the driver IC chip 60 is conducted to the side surface 21f of the head 21 through the driver IC chip 60 and further conducted to the ink in the head 21. That is, the driver IC chip 60 can be forcibly cooled by the ink.

---

**Access. Number**

95-304168

**Title**

INK JET DEVICE

**Patent assignee**

(2000526) BROTHER IND LTD

**Inventor(s)**

ISHIKAWA, HIROYUKI

**Pub. number**

95.11.21 J07304168, JP 07-304168

**Appl. Number**

94.05.12 94JP-098878, 06-98878

**Engl. Ab. Source**

95.11.21 SECT. , SECTION NO. ; VOL. 95, NO. 11.

**Int. class.**

B41J-002/045; B41J-002/055

**JAPIO class. codes**

29.4 (PRECISION INSTRUMENTS--Business Machines)

**Fixed Keyword**

R005 (PIEZOELECTRIC FERROELECTRIC SUBSTANCES); R105 (INFORMATION PROCESSING--Ink Jet Printers); R124 (CHEMISTRY--Epoxy Resins)

**Abstract**

PURPOSE: To lower the cost and stabilize jet characteristics. CONSTITUTION: A substrate 41 provided with a conductor circuit 42 corresponding to the positions of respective ink chambers is bonded on a face on the side opposite to the side of forming channels 15 of a piezoelectric ceramic plate 5. The substrate 41 is composed of an insulated body to transmit easily the heat of chip 60 in order to drive the ink jet head 1, electric current flows through the IC chip 60 to generate heat. The heat is transmitted to ink in an ink chamber or a manifold 21 through the substrate 41 to heat the ink. As the ink holding the heat is jetted from a nozzle 32, the heat is removed from the ink head 1 to provide thecooling effect of the IC chip 60.